

## EJERCICIOS 1-7

(1-40) En las expresiones siguientes, efectúe las operaciones indicadas y simplifique.

$$1. \frac{4x}{2x+3} + \frac{6}{2x+3}$$

$$2. \frac{2x}{x-2} - \frac{4}{x-2}$$

$$3. \frac{x^2}{x-3} - \frac{5x-6}{x-3}$$

$$4. \frac{2-3x}{x-1} + \frac{x^2}{x-1}$$

$$5. \frac{2x+1}{x+2} + 3$$

$$6. \frac{3x-2}{x+1} - 2$$

$$7. \frac{x}{x+2} + \frac{3}{2x-1}$$

$$8. \frac{x}{2x-6} + \frac{x-2}{x+1}$$

$$9. \frac{2}{x-1} - \frac{3x+1}{x+1}$$

$$10. \frac{x}{2x+3} - \frac{2x-3}{4x+1}$$

$$11. \frac{2x}{2x-1} - \frac{x+2}{x+1}$$

$$12. \frac{2}{5x-6} - \frac{4}{10x-2}$$

$$13. \frac{1}{x^2-5x+6} - \frac{1}{x^2-3x+2}$$

$$14. \frac{x}{x^2+2x-3} + \frac{1}{x^2+x-2}$$

$$15. \frac{x}{x^2+2x-3} + \frac{1}{1-2x+x^2}$$

$$16. \frac{2}{9x^2-6x+1} - \frac{3}{x+1} + \frac{1}{3x^2+2x-1}$$

$$17. \frac{1}{x^2+4x+3} + \frac{3}{x^2-1} - \frac{2}{x+3}$$

$$18. \frac{x}{2x^2-x-1} - \frac{3}{1-2x+x^2} + 2$$

$$19. \left(\frac{x^2-1}{x}\right)\left(\frac{x^2+2x}{x+1}\right)$$

$$20. \left(\frac{x^2+4x}{2x+6}\right)\left(\frac{2x+4}{x+4}\right)$$

$$21. \frac{2x+4}{1-x} \cdot \frac{x^2-1}{3x+6}$$

$$22. \frac{x^2-7x+12}{x^2-x-2} \cdot \frac{x^2+4x+3}{2x^2-5x-3}$$

$$23. \left(\frac{x^2+5x+6}{x^2-6x+8}\right)\left(\frac{2x^2+9x+4}{2x^2+7x+3}\right)$$

$$24. \left(\frac{2x^4-2x}{2x^2-5x-3}\right)\left(\frac{2x^2-3x-2}{x^3+x^2+x}\right)$$

$$25. \left(3 + \frac{1}{x-1}\right)\left(1 - \frac{1}{3x-2}\right)$$

$$26. \left(x - \frac{3}{x-2}\right)\left(\frac{9}{x^2-9} - 1\right)$$

$$27. \left(\frac{x^2+x}{2x+1}\right) \div \left(\frac{x^3-x}{4x+2}\right)$$

$$28. \left(\frac{3x-6}{2x^2+4x+2}\right) \div \left(\frac{x^2-4}{x^2+3x+2}\right)$$

$$29. \frac{3x^2-x-2}{x^2-x-2} \div \frac{3x^2+5x+2}{2x^2-5x+2}$$

$$30. \frac{2x^2+x-1}{2x^2+10x+12} \div \frac{1-4x^2}{4x^2+8x-12}$$

$$31. \frac{\frac{x^2 + x - 2}{2x + 3}}{\frac{x^2 - 4}{2x^2 + 5x + 3}}$$

$$32. \frac{1 - 1/t^2}{t + 1 - 2/t}$$

$$33. \frac{x + 2 + \frac{3}{x - 2}}{x - 6 + \frac{7}{x + 2}}$$

$$34. \frac{p - \frac{2}{p + 1}}{1 - \frac{4p + 7}{p^2 + 4p + 3}}$$

$$35. \frac{x^{-1} + y^{-1}}{(x + y)^{-1}}$$

$$36. \frac{(x - y)^{-1}}{(x^{-2} - y^{-2})^{-1}}$$

$$37. \frac{x^{-2} + y^{-2}}{x^{-2} - y^{-2}} \cdot \frac{x - y}{x + y}$$

$$38. \frac{y^{-2} - x^{-2}}{xy^{-1} - yx^{-1}}$$

$$39. \frac{1}{h} \left( \frac{1}{x + h} - \frac{1}{x} \right)$$

$$40. \frac{1}{h} \left[ \frac{1}{(x + h)^2} - \frac{1}{x^2} \right]$$

(41-52) Racionalice los denominadores de las expresiones siguientes.

$$41. \frac{1}{3 + \sqrt{7}}$$

$$42. \frac{3 + \sqrt{2}}{2 - \sqrt{3}}$$

$$43. \frac{1 + \sqrt{2}}{\sqrt{5} + \sqrt{3}}$$

$$44. \frac{6\sqrt{2}}{\sqrt{3} + \sqrt{6}}$$

$$45. \frac{3}{3 + \sqrt{3}}$$

$$46. \frac{1}{2\sqrt{3} - \sqrt{6}}$$

$$47. \frac{1}{\sqrt{x} - \sqrt{y}}$$

$$48. \frac{\sqrt{x} - \sqrt{y}}{\sqrt{x} + \sqrt{y}}$$

$$49. \frac{x}{\sqrt{x + 2} - \sqrt{2}}$$

$$50. \frac{x}{\sqrt{x + 1} - \sqrt{x - 1}}$$

$$51. \frac{2x - 2}{\sqrt{x + 3} - 2\sqrt{x}}$$

$$52. \frac{4 - x}{\sqrt{2x + 5} - 3\sqrt{x}}$$

(53-56) Racionalice los numeradores de las expresiones siguientes.

$$53. \frac{5 - \sqrt{3}}{2}$$

$$54. \frac{\sqrt{x + 4} - \sqrt{x}}{2}$$

$$55. \frac{\sqrt{x + h} - \sqrt{x}}{h}$$

$$56. \frac{\sqrt{x - 2 + h} - \sqrt{x - 2}}{h}$$